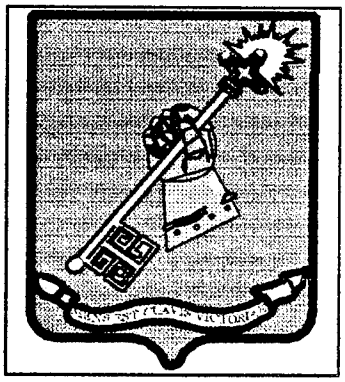
BRIGADE DEEP BATTLE: FACT OR FICTION

A Monograph
by

Major Mark R. Pires
Armor



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ABSTRACT

HEAVY BRIGADE DEEP BATTLE: FACT OR FICTION by MAJ Mark R. Pires, USA, 49 pages.

This monograph examines the ability of current and future heavy brigades to conduct effective deep operations. Current doctrine states that heavy brigades conduct deep operations as part of the overall battlefield framework. Heavy brigades have very limited intelligence, attack, and command and control assets to use in conducting deep operations. Due to the limitations of available assets there is considerable debate within the Army about whether or not brigades actually conduct deep operations.

The monograph is divided into five sections. Section one establishes the purpose of the study and the significance of the research question to the Army. Section two is a historical perspective on the development of deep operations theory and doctrine and concludes with the current definition of deep operations. Section three analyzes the ability of current heavy brigades to conduct effective deep operations. Section four analyzes the ability of future heavy brigades to conduct effective deep operations. The final section offers conclusions and implications.

Conclusions of this study indicate that current heavy brigades do have the ability to conduct effective deep operations. The monograph discusses limitations of current heavy brigade deep battle assets. The study of future heavy brigades indicates that they will have an enhanced ability to conduct effective deep operations.

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SECTION I

INTRODUCTION

Conducting deep operations is an important part of current U.S. Army doctrine. The 1993 version of Field Manual (FM) 100-5 states that deep operations ". . . are executed at all levels with fires, maneuver and leadership."[1] While it is widely accepted that divisions and corps can conduct effective deep operations, there is considerable debate in the Army as to whether or not brigade level units can conduct effective deep operations. Evidence of this debate will be provided in succeeding paragraphs.

The debate over the ability of brigades to conduct effective deep operations focuses on resources. Divisions and corps have attack systems such as the Army Tactical Missile System (ATACMS) and attack helicopters to use in conducting deep attacks. They have access to intelligence systems such as the Joint Surveillance Target Attack Radar System (J-STARS) and Quickfix to locate and track enemy targets for deep attack. Divisional armored and mechanized infantry brigades, on the other hand, do not normally have access to such powerful deep attack weapons and sensors as division and corps control these assets.

Brigades do have a limited amount of resources with which to observe and attack deep targets. However, brigades must also use their limited resources to

carry out successfully their primary focus, conducting close operations.[2] Because of these limitations brigades may have difficulty in conducting effective deep operations. This monograph will answer two questions. First, do U.S. Army heavy brigades currently have the capability to conduct effective deep operations? Second, will U.S. Army heavy brigades have the capability to conduct effective deep operations in the future?

While FM 100-5 contains a general discussion of deep operations, other FMs specifically address brigade deep operations. FM 71-3 states that ". . . brigades must be poised to exploit every opportunity to disrupt the enemy timetable by combining fires, barriers, and maneuver during deep, close, and rear operations."[3] FM 71-123 describes the brigade command group controlling the close, deep, and rear battles. It also discusses the brigade staff planning complementary close, deep, and rear battles.[4]

Despite doctrinal references to brigade deep operations, many people within the Army do not believe that brigades possess the capability to conduct deep operations. According to a recent article in the Combat Training Center Bulletin, "Deep operations are fought by divisions and corps, not by brigades . . . they have neither the time nor the visibility of the battlefield to effectively plan and direct deep operations . . . "[5] Comments from the Combat Maneuver Training Center (CMTC) in Germany indicate that brigade after action reviews do not normally cover deep operations, because they consider it a division fight.[6] Adding to the controversy over brigade deep operations is a lack of

clear doctrine on the subject. Field Manuals 71-3 and 71-123 refer to brigade deep operations but neither provides sufficient information on how they should be conducted. The office of Concepts and Doctrine Development at Ft Leavenworth recently exchanged memorandums with the Infantry and Armor Centers and Combat Training Centers on the subject of brigade deep operations. The memorandums referred to doctrinal and resource shortfalls concerning brigade deep operations.

Even brigade observer controllers from the National Training Center (NTC) who believe that brigades can and do conduct effective deep operations cite their primary doctrinal reference as FM 100-5. They infer their brigade deep operations doctrine from the discussion of disrupting enemy synchronization and initiative through deep operations.[7] More specific doctrine concerning brigade deep operations would preclude a need to infer from FM 100-5, and end speculation about whether or not brigades fight deep.

As stated earlier, doubts about the ability of brigades to conduct effective deep operations center on a lack of sufficient resources. Heavy maneuver brigades possess very limited intelligence collection assets. They do not have organic scouts or other assets for deep reconnaissance and surveillance. Brigades also have very limited assets that are capable of attacking deep targets. The brigade does have a direct support (DS) field artillery (FA) battalion, but that battalion must support the close and deep fights, and the brigade must rely on division for other deep attack assets. There is also

concern that the organization of the brigade staff is too small to plan and execute both close and deep operations. Given the limited organization and resources available to brigades, and the powerful deep attack systems at division and corps, some argue that the deep fight should be left to those higher echelons.

This monograph will examine the ability of current and future heavy brigades to conduct effective deep operations in four major sections. Section one will trace the evolution of deep battle theory from early theorists through the development of U.S. deep operations theory. This section will also include a discussion of current U.S. Army deep battle doctrine, the definition of deep operations, and the objectives of brigade deep operations.

Section two will analyze the ability of current heavy brigades to conduct effective deep operations. Effectiveness will be measured against the definition and objectives of deep operations established in section one. Section three will analyze the ability of future heavy brigades to conduct effective deep operations, using the same definition and objectives. Finally, section four will answer the research questions and offer conclusions.

SECTION II

THE EVOLUTION OF DEEP BATTLE THEORY

Early deep battle theory can be traced back to the work of several Soviet military theorists, most notably Mikhail Tukhachevskiy and Vladimir Triandafillov. Working in the 1920s and 1930s, Tukhachevskiy viewed the new weapons of warfare (airborne, motorized, and mechanized forces) as creating new potential for destroying enemy forces. Old forms of operational maneuver fixed enemy forces along the front lines, but rarely resulted in decisive victory because they could not prevent the enemy from withdrawing and repositioning forces in depth.[8] The enemy was normally able to reposition deep reserves to reinforce threatened sectors before the attacker could exploit any penetrations. Tukhachevskiy believed that if used properly, the new equipment offered the possibility of solving this dilemma.

The answer to the problem was fixing the enemy not only along the front lines, but also in depth so that reserves could not reposition in time to block the penetration. Tukhachevskiy envisioned using airborne assault landings in the enemy rear combined with highly mobile forces making rapid penetrations to the depth of the operational reserve. The deep striking forces could disrupt enemy command and control, destroy artillery, cut lines of communication, and isolate the main forces from the reserves.[9] By fixing front line units, creating a

penetration, and simultaneously preventing the use of reserve forces, the attacking forces could destroy enemy echelons in depth, achieving a decisive victory. With the visionary Tukhachevskiy providing the broad concepts, Triandafillov developed the practical application of deep battle.

Triandafillov called for three distinct groups of tanks. Two of the tank groups would support the infantry. The third group of tanks would penetrate in depth to the enemy rear. Working in cooperation with long range artillery and aviation assets, the long range tank group would destroy enemy headquarters, artillery areas, and reserve forces. This "new form" of warfare, simultaneous close and deep strikes, offered the possibility of defeating the enemy in detail.[10] By 1936 the work of these two Soviet visionaries had been codified into the Soviet Field Service Regulations.

The 1936 regulation called for the "Simultaneous neutralization of the entire depth of the enemy defense."[11] According to the regulation, deep battles would begin with air attacks against reserves and rear areas. Artillery would fire throughout the entire depth of the enemy area. Long range tanks would penetrate in depth, followed by infantry and infantry support tanks. The mechanized forces would sweep as far as possible into the enemy rear, preventing the employment of reserves.

It is interesting to note that early in the development of deep battle theory Tukhachevskiy recognized a problem that our Army still wrestles with today. He realized the difficulty and complexity inherent in controlling operations in

depth. Tukhachevskiy foresaw the problems in coordinating actions between numerous units (artillery, airborne, infantry, tank and aviation units), creating penetrations and simultaneously striking.[12] The art of synchronizing various forces and operations remains an important and complex aspect of all deep operations. Tukhachevskiy and Triandafillov were not the only early theorists examining the possibilities presented by mechanized forces.

In Britain, following World War I, B. H. Liddell Hart and J. F. C. Fuller also explored how to employ the new weapons. The ideas generated by the British theorists were not very different from those of their Soviet counterparts. Hart and Fuller also believed that fast moving mechanized forces provided an opportunity to strike deep into the enemy rear areas. They envisioned light, fast tanks moving through the enemy lines and bypassing forward units. Once in the rear the tanks would seek out enemy command posts and communication centers. The aim was to cause disorganization and the capitulation of enemy forces.[13] Like the Soviets, the early British theorists saw the possibility of disrupting and defeating the enemy by attacking him deep.

In the years following World War I, the desire to bring decisiveness back to the battlefield, combined with the advent of mechanized forces, caused the Soviets and British to think in terms of depth. In the 1970s particular conditions of the battlefield also caused the U.S. Army to think in terms of deep operations. Army doctrine at that time focused on the defense of Europe. U.S. forces, greatly outnumbered by their Soviet adversaries, began to search

for ways to defeat a numerically superior force. Army thinkers questioned whether the doctrine of active defense, attriting the enemy while giving ground until friendly forces could launch an offensive, would work. The search for a viable solution led to the idea of "extending the battlefield."

General Donn Starry was the primary driving force behind the concept of extending the battlefield. Starry, the TRADOC commander, worried that Army doctrine placed too much emphasis on defeating Soviet first echelon forces, and risked defeat by the second echelon.[14] To avoid being overwhelmed by the sheer weight of numbers, Starry believed that second echelon forces had to be delayed or disrupted. Starry's idea was to interdict second echelon forces with deep attacks while simultaneously destroying first echelon forces in the close battle.

The objective of deep attacks against follow on forces was to delay and disrupt, not to destroy. Starry pointed out that although destruction of second echelon forces would be preferable, it was impractical. Assets capable of attacking deep were limited, therefore critical targets would have to be chosen that would upset the enemy's plans and deprive him of freedom of movement. Properly applied, deep attacks would deny the enemy the ability to apply mass at the point and time of his choice.

Unlike the early British and Soviet theories, Starry's concept evolved from a defensive, not offensive, context. Starry did not emphasize deep maneuver. He listed the principal tools of deep attack as air, artillery, special forces,

electronic warfare, and deception.[15] Starry viewed deep attacks against second echelon forces as essential to victory. His ideas stressed thinking of depth in terms of time, distance, and resources. In a corps level scenario Starry envisioned the corps commander using deep attacks to delay the second echelon long enough for divisions to destroy first echelon forces and prepare for the next echelon.

Starry's ideas concerning extending the battlefield eventually resulted in the Army's Airland Battle doctrine. Current Army deep operations doctrine expands Starry's ideas. It continues to stress the importance of attacking the enemy in depth. FM 100-5 defines depth as "The extension of operations in time, space, resources, and purposes."[16] Thinking about fighting the enemy in depth causes commanders to see past the current close fight and envision actions required in the future. Like Starry's concept, current attack in depth means engaging committed and uncommitted enemy forces throughout the extent of their dispositions. Operations in depth allow commanders to control the tempo of the battle by disrupting the enemy's plans and coordination, reducing his freedom of action and flexibility.[17]

Simultaneity is an important element of operations in depth. The objective of simultaneous attack in depth is to defeat the enemy faster while protecting the friendly force. It presents the enemy commander with the unsolvable dilemma of having to react to multiple threats throughout the width and breadth of his formations. If properly executed, simultaneous attack in depth

overwhelms the enemy's ability to respond to friendly actions. The ability to achieve such an effect requires long range precision munitions, near real-time command, control, communications, and intelligence (C3I), and highly mobile combined arms forces.[18] Conducting deep operations is a part of attacking in depth.

Successful deep attacks afford many significant advantages to the attacker. They deny the enemy commander freedom of action by preventing him from applying his forces at the time and place of his choosing. They also allow friendly forces to fight against a numerically superior enemy by ensuring more favorable force ratios in the close fight. In this way deep operations may be used as an economy of force by preventing uncommitted enemy forces from influencing the close fight.[19]

Deep operations help to minimize casualties by attriting enemy forces before they reach the forward line of troops. Deep operations can set conditions that facilitate decisive future close operations. They help to isolate the close fight by preventing the enemy from concentrating his forces at the decisive point. Deep attacks use technological advantages by expanding the battlefield to the full extent of friendly weapon systems.[20] Finally, in doing all these things, the commander can use deep attacks to seize the initiative by controlling the tempo of the battle.

One of the contentious questions concerning deep operations is, how deep is deep? Deep operations do not correspond to set distances. Rather than a

being a function of depth, deep operations are a function of the enemy forces that are being attacked and the intent of the operation.[21] Operations conducted against uncommitted enemy forces relatively close to the forward line of troops can constitute deep operations. Due to the complex nature of deep operations, their successful execution requires specific types of assets.

The assets necessary for successful deep operations are primarily from the areas of intelligence, attack weapons, and command and control. Intelligence requirements include collectors that can acquire and track targets. These collectors must provide real-time targeting information to decision makers. Attack weapons, both lethal and nonlethal, must be capable of striking deep targets and achieving the desired effect. Finally, the command and control organization must be able to quickly plan and execute deep attacks. The organization must be able to synchronize the various systems that are used in deep operations.

The selection of targets for deep attacks will depend upon the commander's intent. For example, a deep operation that is clearing the way for incoming air assets would target enemy air defense weapons. Command and control nodes are often targeted to disrupt and desynchronize enemy operations. Attacks against follow on forces and reserves disrupt their entry into the fight. Other common deep targets include artillery assets, logistics elements, air assets, and lines of communications. Ultimately, target selection must support the intents of both the immediate and higher commanders.

The Army currently defines deep operations as "All actions which support the friendly scheme of maneuver and which deny to the commander the ability to employ his forces not yet engaged at the time, place, or in the strength of his choice."[22] As discussed earlier, the definition does not specify distance, only that unengaged forces are attacked. Forces over the next ridgeline, only a few kilometers away, but out of direct fire contact, can be considered deep targets. Having examined operations in depth and deep attacks, it is necessary to consider why brigades conduct deep operations.

The battlefield focus of brigades is to direct battles against enemy battalion and regimental size units. Brigades fight up to fifteen kilometers forward of their own forward line of troops. They direct battles by controlling task forces and attack helicopter units, establishing priorities of supporting artillery fires, and coordinating close air support (CAS).[23] The objectives of brigade deep operations will vary depending of the factors of METT-T (mission, enemy, terrain, troops, and time available).

At the brigade level the purpose of deep operations is to shape the battlefield for the current close fight. The brigade commander attempts to use deep operations to achieve favorable conditions at the point of main effort. He accomplishes this primarily by reducing the enemy commander's ability to reposition forces to mass against the attacking or defending friendly unit.[24] The friendly commander achieves this by delaying or disrupting enemy companies or battalions before they reach direct fire range. Brigades may

attempt to isolate, attrit, or destroy enemy units in order to disrupt the synchronization of the enemy plan. By denying the enemy commander options, the friendly commander seizes and retains the initiative. He controls the tempo of the battle.

SECTION III

CURRENT BRIGADES AND DEEP OPERATIONS

An analysis of the ability of current heavy brigades to conduct deep operations must begin with an examination of their organization. Brigades consist of a tactical headquarters that can control two to five battalion task forces. The Headquarters and Headquarters Company is the only permanently assigned brigade unit. Brigades receive a proportional share of divisional combat, combat support (CS) and combat service support (CSS) assets. These assets normally include a direct support field artillery battalion, engineer battalion, air defense battalion, signal platoon, military police platoon, combat intelligence and electronic warfare assets, a tactical air control party, and a forward support battalion.

A significant aspect of heavy brigade organization is a lack of reconnaissance and intelligence assets. Brigades do not have a dedicated, organic reconnaissance unit. The battalions that are assigned to brigades have scout platoons, however those platoons primarily provide intelligence to the battalion commander. Brigades must rely primarily on higher and lower units to provide them with intelligence reports.[25] Brigades may task battalion scouts to provide intelligence through the battalion. They may receive ground surveillance radar (GSR), artillery counterfire radar or other intelligence

collection assets. Brigades may receive intelligence from the division cavalry squadron and other sources at higher echelons. Those assets will be discussed later in the monograph. The bottomline is that the brigade has limited dedicated reconnaissance and intelligence assets.

To conduct effective deep operations the brigade must be able to plan deep operations, acquire and track deep targets, then attack those targets. This section will discuss the resources available to current brigades for conducting deep operations. The discussion of resources will be organized using decide, detect, deliver, as assessment criteria. This organization forms a logical discussion sequence because the decide, detect, deliver methodology is used in attacking deep targets.

The decide phase is the planning phase. It is staff- work intensive and requires proper organization and adherence to established procedures. The intelligence preparation of the battlefield (IPB) process is the key to the decide phase. IPB must focus on a specific friendly course of action (COA) against a specific enemy. The commander focuses the IPB process by giving specific guidance to the S2.

The staff conducts target value analysis to nominate high value targets (HVTs). HVTs are assets that the enemy commander requires for the successful completion of his mission. The S2, S3, and fire support officer (FSO) conduct wargaming and recommend which HVTs will become high payoff targets (HPTs). In order to qualify as HPTs the targets must be

detectable, attackable, and if successfully attacked, contribute substantially to the success of the friendly plan.[26]

Named areas of interest (NAIs), targeted areas of interest (TAIs), and decision points (DPs) are established to confirm or deny enemy COAs and where and when HPTs will be attacked. The next important step is to identify intelligence assets to acquire and track HPTs. An attack guidance matrix (AGM) is prepared, it includes the HPTs, when and how they will be attacked, any attack restrictions, and desired effects. The staff then determines trigger points based on how long it will take the chosen attack system or effects to actually reach the target. If battle damage assessment (BDA) is required, an asset must be identified to provide intelligence on the results of the attack. The value of using scarce collection assets for BDA must be weighed against competing priorities. Having determined what collection assets are needed, the staff tasks organic sensors and requests sensor support for targets that it cannot cover.

The steps discussed above show that planning deep operations is a complex process that requires extensive staff work. Therefore, the entire brigade staff must be considered a deep operations resource. Each member of the staff has important functions to perform in planning deep operations. As stated earlier, the commander focuses the planning process with his guidance. He approves the PIR and will ultimately approve any deep operations plans. During the battle the commander will synchronize the close, deep, and rear battles from his

forward position with the brigade command group.

Deep operations are planned and executed from the brigade main command post (CP). The key players at the main CP are as follows. The executive officer (XO) is overall in charge of planning and executing deep operations. The fire support officer (FSO) is responsible for planning and executing fire support for deep operations. The intelligence and electronic warfare support element (IEWSE) coordinates IEW support (intercept and jamming) for the deep fight.

The S2, as previously stated, drives the IPB process, and "reads" the battlefield for triggers to attack deep targets. The forward air controller (FAC) coordinates close air support (CAS) and the air defense officer (ADO) is responsible for coordinating weapons control status for deep operations. The brigade engineer plans Family of Army Scatterable Mines (FASCAM) missions along with the FSO, while the brigade signal officer plans retrans locations so that the main CP can talk to deep observers. Finally, the tactical air control party (TACP) advises the commander of capabilities of aircraft and munitions.[27] Having decided which targets it wishes to attack, the staff transitions into the detect phase.

The S2 is the central figure of the detect phase. The S2's collection management plan focuses on situation development and the detection of HPTs. As previously mentioned, heavy brigades have no organic resources for gathering intelligence. They have neither reconnaissance nor MI assets. In

producing a collection plan that will acquire and track deep targets the S2 must rely on assets from higher and lower units.

The brigade can receive reports from subordinate battalion task forces (BN/TF), including reports from scout observation posts (OPs). The brigade may also task the BN/TFs to cover certain NAIs or TAIs. Field artillery target acquisition systems from DIVARTY may be attached to the brigade's DS artillery battalion. An example of one of these systems is the AN/TPS-58 Moving Target Locating Radar that can detect vehicles out to a range of 18 KM.[28] A recent TOE change has given brigades six combat observation and laser teams (COLTS) from DIVARTY. The COLT provides deep observation capability for controlling indirect fires, and can laser designate targets for Copperhead (FA), Maverick (CAS) missiles, and other Air Force and Navy munitions.

The OH58D helicopter with an aerial fire support officer is a divisional or corps platform that may be employed under brigade control, normally OPCON or reinforcing to the DS FA battalion. The OH58D has day/night capability, can provide eight digit grid locations to targets, laser designate for Copperhead, Maverick missiles, and other laser guided munitions, and has digital links to any TACFIRE artillery unit.[29]

The MI company in DS of each heavy brigade will normally task organize an IEWSE to the supported brigade. The IEWSE will typically include ground surveillance radar (GSR), VHF radar direction finder (27 KM range), VHF

communications jammer (27 KM), HF intercept (40 KM), and HF communications jammer (40 KM).

Because of the lack of reconnaissance and surveillance assets, the brigade commander may form an ad hoc deep observation group. One option for this type of organization is to task one or more of the BN/TFs to provide scout teams to work for the brigade. These scouts can be teamed with GSRs, COLTs, and OH58Ds (if available), to provide observation, indirect fire adjustment, and laser designation for deep operations.[30] The commander and his staff must weigh the value gained from using scouts at the brigade level against the cost of taking them from the BN/TFs. Having completed the decide and detect phases, this discussion of resources available for brigade deep operations will conclude by examining attack delivery systems.

The brigade's DS FA battalion constitutes it's primary deep attack delivery system. The DS battalion consists of 155mm self propelled howitzers. The howitzers can shoot High Explosive (HE) or Dual Purpose Improved Conventional Munitions (DPICM) out to 18,100 KM (conventional) or 23,500 KM (rocket assisted propellent, [RAP]). HE and DPICM rounds are capable of delaying or disrupting heavy forces, and destroying light forces.

The howitzers can also shoot the (FASCAM). FASCAM minefields are best used for closing gaps or lanes in minefields or reseeding breached obstacles. They can also be used to delay or disrupt attacking forces, or hinder the enemy's ability to reinforce, withdraw, or use it's reserve. When not used

in conjunction with an obstacle, FASCAM should be used at a choke point. FASCAM minefields are 400x400m and consist of a combination of anti-tank (AT) and anti-personnel (AP) mines. A 155mm battalion carries enough rounds to shoot two long duration (longer than 24 hrs) and two short duration (shorter than 24 hrs) minefields.[31]

The DS battalion can also shoot Copperhead, a 155mm laser guided projectile. The Copperhead has a shaped warhead with a laser seeker that homes in on reflected energy from any coded laser designator, including the COLTS Ground/Vehicular Laser Locator Designator (G/VLLD). It is optimally used against multiple targets in a large target array, or against single targets which are HPTs.[32]

Brigades can also use close air support (CAS) assets to attack deep targets. CAS is defined as air attacks on hostile surface forces that are in close proximity to friendly troops. CAS is the primary type of air support given to brigades. The deep observation teams previously described could be used to control CAS for deep operations. As an example, the A10, a primary CAS aircraft, carries a mix of ordnance including 30mm gun and free fall or laser guided bombs. The NATO standard mix for the A10 is two to four maverick missiles and over 1,100 rounds of 30mm ammunition.[33]

There are two types of preplanned CAS, scheduled and alert mission. Scheduled CAS hits a target at a planned time (time on target), while alert missions are usually held on ground alert for use against a planned target when

requested. Immediate CAS are missions that are too late to be included on the Air Tasking Order (ATO).[34]

As stated earlier, brigades have six COLTs to assist in the detect and deliver phases. The COLT can provide laser designation for Copperhead and Maverick missiles. Maximum effective ranges for laser designating are three KM for moving targets, and five KM for stationary targets. In addition to lasing, COLTs can adjust CAS and FA fires. OH58Ds can also laser designate targets and adjust fires. The OH58D provides the extra dimension of being able to reposition rapidly, contributing added flexibility to the operation.

Brigades may occasionally be afforded the use of attack helicopters and multiple launch rocket systems (MLRS). Attack helicopters are generally not attached lower than division level, however, they may be placed OPCON to a brigade. MLRS use is also normally retained at division level. Each MLRS launcher fires twelve rockets per minute out to 30 KM forward of the FLOT, depending on their firing position. The use of attack helicopters or MLRS greatly increases the brigade's ability to fight deep. However, because use of these assets is the rare exception, rather than the rule, they will not be included in this discussion of brigade resources. Having established why brigades conduct deep operations, and the available resources, it is possible to evaluate the ability of current brigades to conduct effective deep operations.

To be considered effective, brigade deep operations must be able to deny the enemy commander the ability to employ his forces not yet engaged at the

time, place, or in the strength of his choice. Brigades can attempt to accomplish this in several ways. They can delay or disrupt enemy forces before those forces enter direct fire range. Brigades can also attempt to deny the enemy commander options by isolating, attriting, or destroying enemy elements in order to disrupt synchronization. Finally, brigades can attempt to shape the battlefield for the close fight by reducing the enemy ability to reposition forces to mass against friendly units.

Given the resources available, brigades can accomplish some of the objectives described above. I will illustrate with four examples, two from the defense and two from the offense. In a defense against an enemy regiment, the brigade can use deep operations to disrupt one of the two lead enemy battalions. It can achieve disruption by using a combination of Copperhead, DPICM, FASCAM, and CAS, to destroy selected vehicles. The HPTs, in this case, might be obstacle breaching assets, command and control (C2) vehicles, air defense artillery (ADA) systems, or whatever is deemed most important.[35]

In the second defensive scenario the brigade could delay the second echelon battalion by using FASCAM to close a breach lane. As the enemy battalion enters the minefield the brigade can shoot Variable Timefuze (VT) airbursts to cause vehicles to button up. Simultaneous to this delay action, the BN/TFs destroy the two lead MRBs in the close fight.[36]

In the attack, the brigade could use a combination of artillery fires (HE, DPICM, and Copperhead) and CAS to delay forces that are attempting to

reposition on the objective. The brigade could also use FASCAM and CAS to disrupt reserve forces not in contact as they move along avenues of approach.[37] Brigades have many other options for conducting deep operations. Executing them successfully requires careful planning. The following are some "keys to success" for brigade deep operations.

To have a chance of success, deep operations must be well planned. The plan must focus against a specific target, with specific desired outcomes. For example, delay the 2nd echelon Motorized Rifle Battalion (MRB). Once the target and outcomes are identified, the brigade must mass enough combat power to achieve the desired effect. A clear commander's intent is the key to this process. The plan must have flexibility to account for enemy alternatives. For example, the plan should have a method for attacking the target on each possible avenue of approach. The plan must also be achievable based on available resources.[38] For example, the DS artillery battalion can delay or disrupt but is not going to achieve destruction of an MRB.

Unity of effort is crucial to both planning and execution. It is achieved by placing one person in charge, normally the brigade XO. Identifying necessary resources early in the process is also important. Resources not available at brigade must be requested from higher or tasked from lower. Once resources are identified, the brigade must prioritize and allocate them.[39] Although it is time and labor intensive, the staff must conduct detailed wargaming, identify decision points and trigger points, and develop the decision support and

synchronization matrixes.

The plan should also build in redundancy for observers and attack systems. For example, the staff should plan FA fires as a backup on a CAS engagement in case the aircraft are diverted. Once the plan is complete it must be briefed thoroughly to everyone involved. This is especially true of deep observers as they are often given inadequate briefings.[40] Detailed rehearsals should be conducted. Rehearsals should include the staff, observers, and any units executing attacks. Having discussed keys to the planning process, the next section will focus on keys for success during the execution phase.

The discussion of keys to successful execution will begin with two specific examples of executing brigade deep operations. In a defensive scenario COLT teams and Ground Forward Air Controllers (GFACs) infiltrate forward to deep observation points covering NAIs and trigger points. The teams remain in place throughout the battle. They notify the Main CP when the planned deep target, in this case the second echelon battalion, enters the engagement area. As the enemy battalion crosses the trigger point the observation teams direct artillery fires and CAS and laser designate key vehicles for Copperhead engagements. The fires delay the second echelon battalion long enough to allow the defending BN/TFs to achieve success in the close fight.[41]

In an offensive scenario, the brigade tasks each BN/TF to provide it with one scout team. The scouts, COLTS, and GFACs infiltrate forward of the attack to deep observation points that look beyond the BN/TF objectives. The

enemy commits his reserves in a counterattack. The reserve force moves along an avenue of approach that passes through a choke point. Once the force is committed to that avenue of approach the observation teams call for a preplanned FASCAM minefield. Available CAS sorties are also directed against the reserve. The deep operation delays enemy reserve forces long enough for the BN/TFs to secure their objectives and prepare to meet counterattacks.[42]

As with the planning stage, attention to detail is important to successful execution. In order to make the previous two scenarios work, the brigade must ensure that many individual pieces are properly executed. The proper emplacement of COLTs requires several considerations. COLT positions must be survivable, and able to see and lase into engagement areas. The COLT must also be positioned to maintain communications so that the team can call for and adjust indirect fires. When engaging with Copperhead, the COLT and firing units must be within an angle-T of 800 mils. Angles greater than 800 mils have an adverse effect on Copperhead targeting.[43] The plan must provide the teams with an adequate supply of food, water, and replacement batteries for the COLT.

COLT positioning must also consider the maximum lasing ranges; three KM for moving targets, five KM for stationary targets. The staff must provide COLT operators with detailed mission instructions, including the fire support matrix, target list, and maneuver and fire support graphics. Finally,

environmental factors, such as smoke, dust, and temperature extremes may attenuate or reflect the laser beam. This could prevent sufficient energy reflection for the Copperhead round to lock on to.[44] These factors should be planned for, with contingencies built in.

The use of FASCAM also requires careful consideration. The S2, S3, FSO, and brigade engineer should coordinate for FASCAM use. The timing of firing of the minefield is key, the enemy must be committed to the avenue of approach before it is fired. A high density 400x400m preplanned minefield requires 12 to 20 minutes to fire.[45] This means that a trigger point must be planned that allows sufficient firing time for the FASCAM to be delivered before the enemy arrives. Because timing will be critical, the observer should have an alternate means of calling in the mission in case TACFIRE is jammed with other missions.

As stated earlier, because of its limited size (400x400 m), FASCAM should only be used in conjunction with man made or existing obstacles. If used in the open FASCAM is easily bypassed. Because it is surface laid, it is best employed where hard to detect, such as at night, in fog or smoke, or when the enemy is buttoned up.[46] One option is to fire the FASCAM, followed by smoke to mask the minefield or VT airburst beyond the minefield to cause the enemy to button up. VT or HE rounds should not be fired over or in the minefield as they would cause the mines to detonate.

The use of FASCAM does entail drawbacks that must be considered.

Shooting FASCAM requires a high angle of fire, making the guns susceptible to counterfire. It also shuts down the guns for other missions, which means there may be periods when no artillery is available for the close fight.[47]

The use of CAS in brigade deep operations also requires specific considerations. CAS missions always consist of at least two aircraft. In a high intensity, high threat environment the aircraft will rarely make more than one pass over the target area due to the lethality of ADA systems. This, combined with the time required to lock on targets, will limit the number of targets engaged. For example, the time required for an A10 to lock a Maverick missile on target will usually restrict each A10 to one missile per pass. In a target rich environment the A10 may also be able to engage a few vehicles with 30mm before breaking off the attack.[48] This means that planners should not expect large numbers of vehicle kills for a two aircraft CAS sortie.

CAS can be integrated with artillery fires to enhance the effects of both systems. Planners should use an ACA for integrating CAS and FA fires. The TACP and TACA coordinate with the aircraft. Finally, CAS aircraft have limited night capability and may need artillery illumination to illuminate the target. A10 and A7 aircraft can fire at night with laser designation.[49]

When available, the OH58D can be integrated with the deep forward observers. By coordinating between the OH58Ds and ground observers the brigade can cover a larger area and build in redundancy. Using the OH58Ds to hand off targets to ground observers allows the brigade to build depth into the

deep fight. Using the OH58D for laser designation requires the same angle-T considerations as the COLT.[50] Having examined the ability of current brigades to conduct deep operations, the next section will analyze the ability of future brigades to conduct effective deep operations.

SECTION IV

FUTURE BRIGADES AND DEEP OPERATIONS

This section will focus on planned and or possible changes that are currently under consideration at the brigade level. The discussion will deal primarily with intelligence systems and digitization.

Currently there are no plans to change the basic structure of heavy brigades. Their organization and combat systems will remain basically the same as described at the beginning of Section III. It is difficult to say if new smart and brilliant munitions will have much impact at the brigade level. Some systems that are currently being developed (IVIS for example) will not change the basic brigade structure. The resources available to future brigades for conducting deep operations include those discussed in the previous section, and those described below.

The All Source Analysis System (ASAS) is a computer based intelligence fusion system that is scheduled to be fielded at brigade through EAC level. ASAS receives, stores, and fuses battlefield information and intelligence into a variety of products. It receives information from a variety of sources including human intelligence (HUMINT), signals intelligence (SIGINT), and imagery intelligence (IMINT).[51] ASAS supports decision making by providing fused intelligence in a variety of products. It provides direct connectivity to remote

sensors and to higher and lower echelons of command. ASAS work stations with a keyboard and video monitor provide the means of integrating with the sensors and echelons. Prototypes of this system are currently being tested. Budget constraints have currently delayed fielding of this system.

The Analysis and Control Element (ACE) can process and fuse data from multiple assets covering all intelligence disciplines. The ACE consists of a headquarters element, single source analysis section, all source intelligence section, collection management team, and targeting team. It provides the commander the means to focus and synchronize diverse intelligence systems in support of any given intent and scheme of maneuver. The ACE achieves intelligence integration by combining collection management, single source and all source intelligence analysis and fusion, all source production, targeting, and asset technical control and dissemination.[52]

Future brigades will also have access to intelligence from Unmanned Aerial Vehicles (UAVs). UAVs are air vehicles that are capable of flight operations without a pilot. There are two types of UAVs; Remotely Piloted Vehicles (RPVs) and Drones. RPVs are tethered by a radio control link, while drones are preprogrammed for both flight and payload operations prior to launch.[53] UAVs provide reconnaissance, intelligence, surveillance and target acquisition (RISTA). Intelligence from UAVs can provide support to IPB, situation development, target confirmation, BDA, and adjustment to indirect and direct fires and CAS. UAVs improve the quality and timeliness of battlefield

information allowing commanders to make better informed decisions. The UAV Short Range (SR) has a range of up to 50 KM. The UAV Close Range (CR) has a range of up to 200 KM. The Remote Video Terminal (RVT) allows supported units to receive video from corps level UAVs. Current fielding plans call for UAV-SR to provide direct support to brigades. The corps MI brigade air recon company will be tasked to report directly to supported units, such as brigades. The DS companies from the divisional MI battalion will provide organic UAV-CR support to their respective brigades. Additionally, the companies will have organic UAV-CR Ground Control Stations (GCS) which are capable of assuming control of any reinforcing UAVs from the GS company or the corps air recon company.[54] The division or corps collection manager will be the tasking authority for UAVs. UAV fielding to brigades is currently scheduled for between 1997 and 1999.

Future brigades will also have access to intelligence from the Joint Surveillance Target Attack Radar System (J-STARS). J-STARS is an airborne radar system that operates in two modes; Moving Target Indicator (MTI) or Synthetic Aperture Radar (SAR) for fixed targets. J-STARS provides a wide surveillance capability. It also has the ability to send all wide area surveillance data that it gathers down through a surveillance and control data link (SCDL) in real time simultaneously to all Ground Station Modules (GSMs) that are within line of sight of the aircraft. J-STARS provides 24 hour coverage as long as aircraft are available. Current plans call for one GSM to be fielded at

each brigade. The Common Ground Station (CGS) will be a derivative of the GSM and have increased functionality and capability, including simultaneous multi-sensor operation.[55]

Future brigades will be enhanced through digitization. Digitization is the "Near real-time transfer of battlefield information between diverse fighting elements to permit a shared awareness of the tactical situation."[56] Digitization is a means of accessing and disseminating data in digital form throughout the battlefield. The aim of digitization is to enhance the art of command and the science of control by leveraging information age technologies.[57] It will allow for the near real-time distribution of intelligence and information.

Digitization will ultimately enable commanders to control forces and synchronize efforts better by making timely decisions based on accurate information. Digitization will eventually lead to smaller sized staffs due to the greater capabilities of command vehicles. Various staff officers (S2, S3, S4) will become rolled into one information manager.[58] Part of the digitization effort is the development of "Golden Threads". Golden Threads are sensor-to-shooter links that reduce timelines for dissemination of sensors and processors.[59] An example of a Golden Thread would be a link from a UAV-CR to an M109 howitzer. Golden threads are scheduled for fielding between 1998 and 2000.[60]

The final future resource that will be discussed is "cuing" Cuing is the use of one or more forms of reconnaissance or surveillance (air, ground, technical)

to provide information that directs collection by other systems.[61] An example of cuing is the use of a Guardrail common sensor to intercept transmissions from a suspected enemy ADA site. The Guardrail intercept cues a UAV to launch to confirm or deny the ADA location. Cuing provides the advantage of making efficient use of limited collection assets. With many competing collection demands, cuing will help the collection manager to support multiple missions.

Given these increased resources, future brigades should have an increased ability to both plan and execute effective deep operations. Planning staffs will be smaller, but will have access to more information. Because of access to systems such as ASAS, UAVs, etc., and digitization, staffs will have a common picture of the friendly and enemy situations and a comprehensive view of the commander's battlespace.[62] Digitized CPs with heads up displays, voice control, interactive graphics and decision support systems will enhance planning. Staffs will have access to a vast array of data, gathered by a wide range of sources, which will facilitate planning by providing fast, accurate analysis of the enemy.

Fears exist that the vast amount of information provided by ASAS, UAVs, and J-STARS will overwhelm planning staffs. With access to all of this information the key to effective planning will be the ability to sort relevant from irrelevant information. Digitization will enable commanders and staffs to publish and disseminate orders more quickly. Commanders and staffs will have

to deal with additional planning factors such as A2C2 for UAVs, ensuring that sensors such as UAVs are available and on station at critical times, and establishing necessary sensor-to-shooter links.

Some aspects of planning will remain unchanged. The commander's intent, PIR, and the targeting process will still drive the deep operations planning system and focus collection. The S2 will continue to direct the collection, processing, and dissemination of intelligence to satisfy the commander's PIR.

The following example will illustrate the possible future execution of brigade deep operations. The staff conducts the planning process to identify deep operations targets. J-STARS acquires and tracks the target, downlinking the information to the ASAS. Based on established priorities, ASAS expedites the report of an HPT to the front of the message cue. The J-STARS sensing cues a UAV launch. The UAV tracks the HPT into the engagement area. An ASAS "target alarm" also alerts the analyst that a prioritized target has appeared. The UAV and a COLT provide eyes as the target enters the deep engagement area. Sensor-to-shooter links expedite the engagement of the HPT using indirect fires. Upon completion of the engagement UAVs provide BDA.

Having analyzed the ability of both current and future brigades to conduct effective deep operations, it is interesting to compare and contrast the two systems. The commander's intent will drive current and future brigade deep operations. They will both require commander's PIR and utilize the decide, detect, deliver methodology. Attack delivery systems will remain largely the

same for both. Like current brigades, future brigades will continue to have limited deep attack systems. The DS artillery battalion, CAS, (when available) electronic warfare, (when available) and attack helicopters (when available) constitute the attack systems for current and future brigades.

The brigade commander will have to continue to balance the payoff of using scarce resources to fight the deep battle. Brigade deep operations will continue to require a realistic appraisal of what effects can be achieved. Like current brigade deep, future deep operations can expect to feasiblely delay or disrupt. Expecting to destroy significant enemy forces with available deep attack assets will continue to be unrealistic. Finally, conducting effective deep operations will continue to require a focused plan. Although there will be many similarities, there will also be substantial differences between current and future brigade deep operations.

One of the principal deep operations weaknesses of current brigades, intelligence and surveillance assets, will improve significantly in the future. Downlinks from J-STARS, ASAS, and UAVs will greatly improve the ability of brigades to look deep. The commander will be able to build greater redundancy into acquiring and tracking targets. With the addition of these deep surveillance capabilities, attack assets will become the most limiting deep operations factor.

The increased access to intelligence systems does carry the danger of overloading the staff with information. The analysis of data will continue to be

key to future deep operations. Planning staffs will eventually become smaller, but because of digitization will have a more complete picture of the battlefield. Digital links will provide the commander and staff with real-time intelligence, sensor-to-shooter links, and cuing. These improvements will speed reaction times facilitating the ability to strike deep on short notice. Having examined current and future brigades, the final section will offer conclusions regarding brigade deep operations.

SECTION V

CONCLUSIONS

Current brigades do have the ability to conduct effective deep operations. Brigades can receive intelligence from higher and lower echelons, however, their ability to conduct effective deep operations is limited by a lack of organic, dedicated intelligence, reconnaissance, and surveillance assets. This limits the ability of brigades to acquire and track deep targets. Current brigades are also limited by the availability of deep attack delivery assets. Brigades conducting deep operations must have a realistic outlook on what they can accomplish. Destroying large armored enemy units is not feasible. However, current brigades can disrupt or delay enemy forces, shaping the battlefield for the close fight. An effective brigade deep operation is one that creates favorable conditions so that its BN/TFs can win the close battle.

Controlling deep operations may be more complex than controlling close operations. Deep operations are almost always fought with indirect assets. Commanders cannot see any part of the fight. The various combat assets used for deep operations require long lead times to trigger. Finally, the lines of communication for deep operations stretch the length of the brigade sector.[63] These factors combine to make deep operations complex to plan and execute.

Because of this complexity, in order for brigades to conduct effective deep operations, they must have a well-thought out system of planning and control.

The staff must be well trained and able to conduct parallel planning for the close and deep fights. The brigade staff is small, so staff members must be disciplined in their roles and functions. The TAC CP must be fully functional so that it can control the close fight while the main controls deep.[64] Conducting effective brigade deep operations is a matter of prioritizing resources. Placing eyes on deep engagement areas may require the creation of ad hoc organizations. The value of dedicating resources to the deep fight must be weighed against their possible loss from the close fight. The brigade observation team (BRONCOS) at the NTC sees many of the problems encountered by brigades that attempt to conduct deep operations.

A common weakness in brigade deep operations observed at the NTC is a failure to allocate sufficient combat power to achieve the commander's intent. If the commander wants to delay an MRB, he must dedicate enough FA fires, CAS, or other assets to accomplish the mission. A second common weakness is a lack of focus for the deep fight, which results in a failure to mass combat power. The key to overcoming this problem is a clear commander's intent. Another common weakness is a failure to conduct wargaming. This often results in shortcomings in planning and execution. This difficulty can only be overcome by a well-trained staff that has a well thought out planning process.

Many weaknesses observed at the NTC are the result of failing to put one person overall in charge of deep operations planning and execution. As stated earlier, the XO is normally the best person for this job. The BRONCOS also

report that brigades often fail to assign responsibility for observing deep TAIs and engagement areas. Additionally, when observation teams are assigned, they are often not briefed adequately on their mission. Deep observation teams are also often given inadequate communications and cannot talk to the main CP. Proper planning and wargaming by the staff can overcome these difficulties. Finally, the brigade often fails to rehearse the deep battle. Time must be allotted for rehearsals from the staff level down to registering artillery.[65]

Two final considerations concerning current brigade deep operations. First, the brigades assets are quite limited. These assets must support the close fight, and the deep fight if the commander chooses to conduct one. The brigade's assets may shift back and forth between the close and deep fight, rather than being dedicated to just one. However, the commander must prioritize where the assets will go in case of conflicting needs. Second, the outcome of the close fight should never depend totally on the outcome of deep operations.[66] Because of the complexity and uncertain nature of deep operations they should not be counted on to determine the outcome of the close fight.

Future brigades will have a significantly increased ability to see the battlefield. This will greatly enhance their ability to conduct deep operations. Future brigades will still require a clear commander's intent, well-trained staff, and the allocation of sufficient resources to the deep fight. They will enjoy faster reaction times due to digitization and cuing. This will also improve their

ability to fight deep. Future brigades will still be limited by available attack assets.

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